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3 A decade of international cooperation
by Joseph B. Rogers

7 Camille was no lady
Virginia—by Warren G. Friend
West Virginia—by Albert E. Beaty

12 Conservation breaks cotton cycle
by Atif Atilla and S. H. Fuchs

16 From the Administrator
Wherever we can help

The Soil Conservation Service, for 10 years, has been sharing its knowledge of soil and water conservation with foreign countries, especially developing countries. In this issue of SOIL CONSERVATION, Joseph B. Rogers, assistant to the SCS Administrator for International Programs, summarizes this decade of international aid in conservation.

The article about the Turkish farmer breaking a 40-year cotton cycle reveals very well the results of SCS's work with other agencies of USDA, the State Department, and the governments of the participating countries. Co-author Fuchs writes from experience. He served in Turkey with an SCS/AID team a couple of years ago.

And after 2 years, Camille is still remembered. "Camille was no lady" is an account of the restoration work in Virginia and West Virginia.

COVER: Workers on a farm in India apply fertilizer on a field prior to planting. The farmowner is a cooperator in a regional pilot project sponsored by the U.S. Agency for International Development.

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A decade of international cooperation

by Joseph B. Rogers
Assistant to the Administrator for International Programs, SCS
Washington, D.C.

On February 7, 1962, D. A. Williams, Administrator of the Soil Conservation Service at that time, signed an agreement between the Soil Conservation Service and the Agency for International Development (AID) to help set up a soil and watershed management program in Tunisia. This marked the formal introduction of the Soil Conservation Service into the foreign assistance field.

Up to this point, SCS had never worked on a contract basis in a foreign country. Those SCS people who had been on foreign assignment had been temporarily transferred to the International Cooperation Administration or other foreign-assistance agencies.

In the 10 years since 1962, SCS has signed participating agency service agreements with the Agency for International Development for work in 12 countries in Africa, Asia, and South America. These agreements have all followed a similar pattern whereby the Service agrees to help with the planning and application of soil and water conservation practices and the training of personnel in developing countries.

This article is a summary of the work and accomplishments of SCS personnel in foreign countries during the past decade.

Algeria

In 1963, SCS began an AID program with the Government of Algeria. The aim was threefold: (1) Install soil and water conservation practices on eroding agricultural land, (2) provide employment to Algerians by utilizing hand labor, and (3) train Algerian technicians in the soil and water conservation methods used in the United States.

SCS provided teams—specialists in soils, engineering, and plant materials—for three field locations and a team leader located at Algiers.

Three plant materials nurseries were established under SCS guidance to provide tree planting stock and grass and legume seed for use in the project areas.

Hand labor was used to install such conservation practices as diversions, rock drops and check dams, spring developments, earth dams for water impoundment, terraces, tree planting, and strip-cropping.

Reports show that about 30 projects with 8,000 to 9,000 workers were in operation at one time.

AID assistance was discontinued in the fall of 1965, and SCS personnel returned to the United States or were assigned to other countries.

Brazil

Three SCS soil scientists worked in Brazil under an AID agreement from January 1965 to December 1968. Their objectives were:

(1) To determine the location and extent of relatively unsettled areas that could provide economic opportunity for several million people from the northeast and other heavily populated areas.

(2) To help increase the size, scope, and effectiveness of the soils staff within the Ministry of Agriculture.

The following summary was made by the USDA Chief of Party for Brazil: "This has been a successful project . . . [it] is being left with a competent corps of professionals that can carry on and reach the objectives sought. Credit should go to all personnel involved and in particular to Loyd Garland, Francis Cleveland, and Dirk van der Voet of the Soil Conservation Service."

Ecuador

USDA signed an agreement with AID on March 16, 1966, to provide assistance to Ecuador. This agreement resulted from previous visits to Ecuador by a

number of USDA people. Gene Buie, director of the Soil Conservation Service's River Basins Division, went to Ecuador in January 1966 as a member of a USDA team reviewing the areas where our technical assistance was needed most.

The agreement provided for the services of 12 full-time specialists, including an SCS irrigation water management adviser and several short-term consultants in several fields.

Roy D. Thompson, state conservation engineer in New Mexico, was selected as the full-time water management adviser, and Laird Wolfe, assistant state conservationist in Nebraska, was selected for a special 3-month assignment.

Phil S. Eckert, chief of the USDA team in Ecuador, stated that Wolfe contributed greatly to the total program and represented the Soil Conservation Service with distinction.

Roy Thompson, who served for 17 months as water use management adviser and for 7 months as acting leader of the USDA team, provided leadership for the following projects:

(1) Preparing a feasibility study for an irrigation project.

(2) Preparing specifications for and designing a potable water system for a village of more than 600 people and supervising its construction.

(3) Preparing engineering and irrigation criteria for a rice program.

(4) Adapting a technical publication on growing rice in the Philippines to Ecuadorean conditions.

(5) Preparing a water-use manual for Ecuadorean water-use engineers.

SCS's technical assistance program in Ecuador was terminated at the end of Thompson's tour.

India

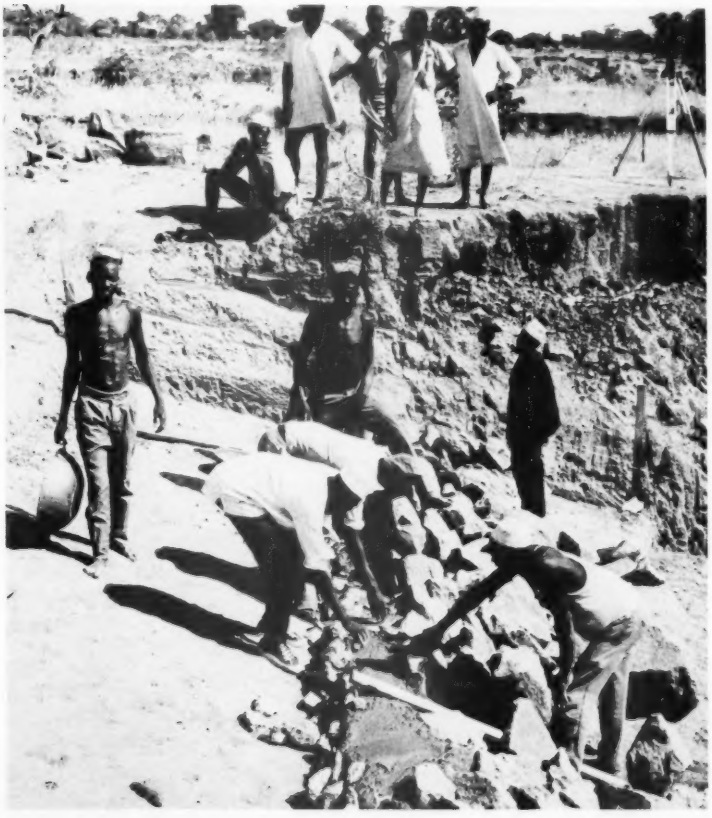
In 1966, a team of four SCS people, including the Administrator of SCS, visited India to study special problems and technical needs in irrigated agriculture.

The following year an agreement was initiated with AID, and a team of experts in soil and water management was selected and sent to New Delhi. Their objective was to develop policies and programs for an integrated approach to a soil and water management program for India.

The team included specialists in irrigation and drainage, hydrology, sedimentation, soils, engineering, ground water, tubewells, economics, and resource inventory and evaluation. Each of these men worked with Indian counterparts in formulating policies, starting pilot projects, developing technical guides and handbooks, and organizing and promoting research.

Three pilot projects were initiated in cooperation with Indian state governments. The Mysore State Project started in 1967 and

(Left) Algerian workers building a diversion ditch.
(Right) This Indian farmer presumably is ready to trade his old wooden plow for the new steel plow firmly held by Kenneth E. Grant, Administrator of SCS.
(Below) Nigerians constructing a drop-chute structure along a deep ravine. Diversions will direct water to the structure, which will prevent the water from dropping directly into the ravine.



became operational in 1968. The first of its kind in India, it included both irrigated and rainfed water management studies and demonstrations.

The second pilot project became operational in Punjab State early in 1969. About 6 months later the third project was started in Uttar Pradesh State.

SCS assigned four men to each project. They assisted the state governments in accomplishing the following objectives:

(1) Bring together the various disciplines needed to identify problems and needs relating to soil and water management and develop plans of action, technical guides for land treatment, and water and crop management programs to meet problems and needs.

(2) Develop and provide training for Indian professionals in agriculture work so they can give technical and other assistance to land users in planning and applying a soil and water management program.

(3) Test, evaluate, and dem-

Cleaning newly harvested rice in the Casamance Region, Senegal.

onstrate the management techniques that make the most efficient use of soil and water resources.

In 1970 and 1971, at the height of SCS operations in India, SCS had 20 men there; eight on the central project in New Delhi and four each in the three states.

Kenneth E. Grant, SCS Administrator, visited India in 1970 and again in 1972 to review the projects.

The Government of India has decided to phase out the pilot projects as the tours of duty of SCS personnel are completed. SCS work in India will come to an end in 1972.

Nicaragua

On June 26, 1964, USDA signed an agreement with AID to provide technical assistance to Nicaragua. In March 1965, Gerald Darby, an SCS agronomist, joined the USDA team there. He was to help develop and carry forward a workable plan for improving forage crops, for feed conservation, and for soil and resource conservation in general.

Objectives of the work were to find high-producing, easily established grasses that were more palatable than local grasses; to find grasses that could do well on the poorly drained, heavy clay soil that covers extensive areas in Nicaragua; and to find perennial legumes that were compatible with the pasture grasses.

SCS also sent two engineers to Nicaragua on a short-term basis to help locate sites for livestock ponds and to review the potential for irrigation development.

Nigeria

In 1965, the Government of Nigeria developed a soil conservation project for the northern part of the country, where erosion is severe, and asked AID for technical assistance. As a result, SCS sent a team of professional conservationists to Nigeria.

Two conservation engineers, a soil conservationist, and a soil scientist arrived in Nigeria during the summer of 1965 and began working with local technicians and land users. They helped identify and apply needed soil and water conservation practices, including masonry check dams, diversion ditches, terraces, and contour cultivation.

In 1969 a training center was established at Jos. The Nigerian Government assigned several of its best technicians to the center as instructors. At first they were assisted by the four SCS men still in Nigeria. Six-month courses in general soil and water conservation and in irrigation water management were initiated.

In 1971 it was decided that the SCS team could be phased out and that the local staff could carry on. The last SCS adviser left Nigeria in June 1972.

Senegal

After reviewing Senegal agriculture needs in 1966, USDA entered into an agreement with AID in January 1967 to provide technical assistance to Senegal.

During the first year, SCS provided the team leader and several short-term consultants in soils, agronomy, and engineering. A full-time engineer was sent in March 1968.

In March 1971, when SCS personnel completed their assignments in Senegal, the team leader reported that crop diversification and large increases in production of corn, millet, and peanuts had been achieved. Production had increased three or four times for all crops except millet.

The project also trained 10 to 20 agriculture students in field operations each year. In addition, many hundreds of farmers, government officials, research per-

Continued on p. 14

Camille was no lady

Postscript to a killer hurricane—

In Virginia

by Warren G. Friend
District conservationist, SCS
Lovington, Virginia

Hurricane Camille struck central Virginia on the night of August 19, 1969. The devastation was incredible. One hundred and fifty-three lives were lost. Damage to property was estimated at $113 million.

The storm centered over Amherst and Nelson Counties, causing extensive landslides and flooding. As much as 31 inches of rain fell on this area in less than 6 hours.

Landslides began at the very crest of ridges. The moving mass of soil, boulders, and trees destroyed everything in its path. The debris and silt blocked valleys, filled streambeds, and covered fertile cropland.

The damage was particularly severe on small and intermediate streams. Water wandered aimlessly over the valley floor seeking channels, but the channels were already filled.

The task of cleaning and reshaping the land and opening stream channels was beyond the individual means of most of the landowners. Help was needed.

The Soil Conservation Service promptly requested emergency funds under Public Law 534, Section 216 of the Flood Control Act of 1950. A total of $4,299,200 was made avail-

Continued on p. 10

In West Virginia

by Albert E. Beaty
District conservationist, SCS
Lewisburg, West Virginia

Hurricane Camille destroyed two West Virginia valleys in the summer of 1969. Today, the valley people say the federally financed recovery work, supervised by the Soil Conservation Service, has brought the land back to full productivity.

The killer hurricane, which traveled north from the Gulf Coast then east in a lethal sweep to the Atlantic Ocean, virtually annihilated streambeds and valley floors in western and eastern Greenbrier County, West Virginia. The county is the home of the world-famous Greenbrier Hotel.

Massive flash flooding occurred on August 19, 1969, at the little town of Anjean and along Spring Creek after extremely heavy rains. A second flash flood, 16 days later, roared through the Spring Creek watershed, near Renick. People in the area say that between 15 and 20 inches of rain fell during each of the 5-hour storms.

It took 15 months to clean up the mess.

The floods damaged houses, farm buildings, farmland, and stream channels. Several houses and buildings were torn from their foundations. Two women died. The rushing water also de-

Continued on p. 11

Virginia

1

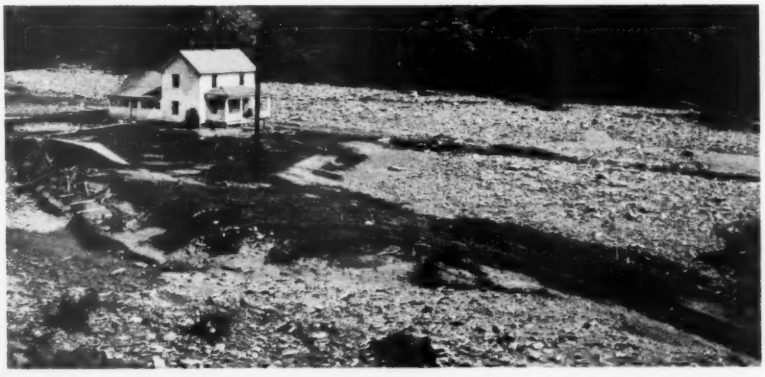
2

West Virginia

3

4

1. Draglines were needed to remove silt and sand from many stream channels.
2. After Camille, Davis Creek in Nelson County was a challenge to men and equipment.
3. The massive rocks weren't there before Camille.
4. Two years later, again the rocks aren't there. But removing them wasn't easy.
5. Floodwaters didn't destroy the house but left the land littered and destroyed the natural stream channel at the bottom of the hill.
6. It took 2 years to clean up and revegetate.



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Continued from p. 7

able for restoring about 600 miles of stream channel and for stabilizing about 4,000 acres of critical silt-producing land. More than $3 million was spent in Amherst and Nelson Counties.

The work began in October and was carried out within the existing organizational framework of the Service.

The first step involved planning. The work had to be done quickly, but it had to be done right. Hydrologists and engineers helped determine size and cross section of channels. Agronomists helped prepare specifications for stabilizing streambanks and critical slide areas. Wildlife biologists helped with guidelines for restoring wildlife and fish habitat. Planners determined how and where to spread spoil and dispose of debris.

County governing bodies and the eight soil and water conservation districts in the damaged area volunteered to sponsor the restoration projects. They assigned priorities and got necessary work permits from landowners. Contracts were let, and a qualified inspector was assigned to each project.

The inspectors were the core of the operation. They contacted every landowner affected by the restoration work. They had to make countless on-the-spot decisions because conditions were so variable.

Stream channels were cleared of silt and debris. Woody material was piled for burning. Stones and boulders were buried, piled, or used to line the new channel. Existing vegetation was preserved where possible; bare areas were seeded. Attempts were made to deepen some places in the channel for fish.

Some scars and debris will remain for a long time.

One year later, 80 streams—550 miles of stream channel—had been restored. The work had involved nearly 3,500 landowners, 12 counties, eight soil and water conservation districts, and 10 SCS work units. At the peak of the operation, about 80 professional people and more than 150 pieces of heavy equipment were on the job.

Two seed mixtures were used in revegetating nearly 4,000 acres of denuded land, channel banks, and other critical areas. These mixtures included annuals and perennials; sericea lespedeza was the base for both. The seed was blended in bulk with a high analysis 30-15-5 fertilizer at the rate of 68 pounds of seed to 400 pounds of fertilizer. This rate of 468 pounds per acre was used in all types of seeding.

Urgency and uniqueness of an area determined the seeding method. In an accessible area, a farm tractor with a whirlwind seeder was used, followed by a chain harrow to cover the seed. About 1,000 acres of slides, critical areas, and less accessible streambanks were seeded by helicopter. Hand seeders were used in some areas. Channel banks were seeded immediately after construction.

The method of seeding varied, but all seedings were successful. Excellent stands of sericea will furnish long-lasting cover with a minimum of maintenance and will provide food for wildlife.

Help came from other agencies. The Agricultural Stabilization and Conservation Service provided nearly $2.5 million for 80 percent cost-sharing on emergency practices. Of the 4,577 requests for assistance received by ASCS in Virginia, 1,690 amounting to about $1.2 million came from Nelson County.

The Office of Emergency Preparedness made about $400,000 available for removing debris from privately owned land.

It has been 2 years since Camille struck. Scars remain on the landscape and in the hearts of people. But all is returning to normal. Land thought beyond reclaiming is producing again. Streams are winding their orderly way to the sea, and the people are beginning to smile again.

Recovery has been as incredible as Camille. ♦

The September issue of SOIL CONSERVATION will have a report on Hurricane Agnes.

Continued from p. 7

stroyed crops and drowned livestock.

Roads were washed out and at least a dozen bridges were destroyed. Mountainsides in timber and grass slid into the valley. Fences, which at first acted as nets, finally gave way before onrushing torrents of water and mud. Mobile houses, cars, and farm equipment were swept downstream. Damage from the two storms was estimated at a quarter of a million dollars.

The county was declared a disaster area by Governor Arch Moore of West Virginia and President Nixon.

The Secretary of Agriculture made the county eligible for funds under the Emergency Conservation Program.

The Soil Conservation Service was assigned the responsibility of technical supervision of the restoration work, and the Agricultural Stabilization and Conservation Service administered the funds.

On October 29, 1969, after claims had been processed, SCS began planning for the removal of debris from fields and streams.

The West Virginia Department of Natural Resources helped SCS develop plans for the stream improvement work.

There was a tremendous job to do. A sizable area of rich bottom land along Spring Creek was covered with rock, silt, and sand swept down by the flooding. In places, the litter was 10 feet deep.

The debris had to be removed to protect valuable farmland from future floods, prevent damage to streambanks, and restore fish habitat.

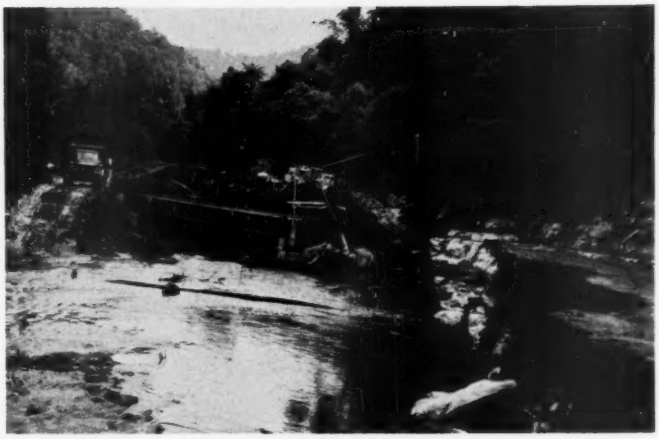
The stream channel also had to be cleared of fallen trees, logs, rocks, sand, silt, and other debris that retarded or diverted the streamflow.

In places, the original channel was completely filled with rock and silt. Restoration work crews piled and burned logs and lumber. Where the channel was reshaped, the banks were seeded to a hardy grass.

Many farmers had neither the time nor the equipment to remove the debris from their farms, so they had to contract out the work. The Greenbrier Valley Soil Conservation District hired a crew and a bulldozer. The crew worked from March to December 1970 removing debris.

The average cost per cleanup job was $890. But opening the stream, reclaiming pastureland, and seeding all disturbed areas on one farm alone cost $8,913.

George McGuire of Renick, one of the farmers who hired the conservation district crew to clear his fields and stream, said, "The district crew did an excellent job in removing debris."



Greenbrier County residents say the bridge is "better now than before the floods."

SCS supervised debris removal on 120 farms.

Federal funds for the cleanup work came from the Department of Agriculture (80 percent) and the Office of Emergency Preparedness (20 percent). They totaled $106,739.

Bill Lewis, commissioner of the Greenbrier County Court, commented about the assistance given to the county: "If the various government agencies had not worked with the local people in reclaiming their land, the people would have suffered immensely after every heavy rain. The emergency restoration work by the Soil Conservation Service and the Agricultural Stabilization and Conservation Service has made the Spring Creek watershed productive again." ♦

Conservation breaks cotton cycle

For years cotton has been the hallmark of agriculture in the lower Buyuk Menderes river basin in western Turkey. Many of the laboriously irrigated fields have been in cotton for as long as anyone can remember. According to farmer Halil Sen, "When asked why they plant cotton on a specific field, it is common for farmers to say, 'Because this is a cottonfield.' "

It was the same on Sen's farm; for 40 years his fields had been kept in cotton.

Halil Sen's farm is 8 miles from the Roman ruins of Ephesus. Sen and his three sons irrigated their fields by small basins which were constructed with hand shovels—an irrigation method used by the Romans on the same fields 2,000 years ago.

Sen's small basins required constant attention; extensive building up of borders and many changes of water were necessary. Three men were kept busy controlling the water.

Customarily, Sen and his sons would start irrigating on July 15. They were able to complete only two irrigations by the first of September—provided the pump didn't break down and the tractor could be spared to run the pump for that prolonged period.

It used to take three men working frantically to irrigate this field. Now one man can do it leisurely, because of furrow irrigation.

In 2 weeks, less than two-thirds of the field would be irrigated, and the crop in the part of the field that had been irrigated first would begin to show signs of moisture deficiency. With the available water and the basin irrigation method, at least one-third of the field was continually dry, and part of the crop always "burned up."

Sen averaged a bale of cotton per acre!

In December 1967, Turkey's General Directorate of Farm, Irrigation, and Soil Conservation (Topraksu) began an onfarm water-development program to help farmers in the Buyuk Menderes basin. Topraksu technicians work with farmers, helping them plan, apply, and maintain needed conservation practices. Bench leveling for irrigation water management and crop rotation are two important practices in the program.

Sen's conservation farming plan included land leveling, furrow irrigation of row crops, return of crop residues to the soil, and use of green manure crops and other fertilizers.

Sen and his sons began implementing their plan in April 1969 by leveling a 16-acre field. They wanted to plant the field to grain sorghum, which had shown excellent results the previous year in nearby demonstration projects, but the high-yielding variety of sorghum seed was not available, so the Sens planted cotton.

After leveling the field and planting cotton, the Sens used a locally manufactured sweep to prepare irrigation furrows. Borders were spaced 15 rows (35 feet) apart to insure irrigation with ease.

Topraksu technicians used an auger to determine when to irrigate and estimated the amount of water needed to raise moisture in the root zone to field capacity. They made ring infiltration studies on the soils to calculate how long the water would have to be on the land to get the desired amount of moisture into the soil.

Two sizes of locally manufactured siphon tubes are used in each row to advance the water down the row. It takes about 30 minutes for the water to advance three-fourths the length of the 800-foot rows. When the water reaches that point, the larger tubes are removed, leaving the smaller ones to complete the irrigation. The water runs in each row for about 2½ hours.

Farmers in the area watching furrow irrigation on the Sen farm found it hard to believe that water could run 800 feet in rows with nothing more than siphon tubes and furrows to control it. The Sens had leveled their field well.

When the Sens began their first irrigation, three men as in the past were on the field. They soon realized, however, that one man could set and change the siphon tubes and still have free time.

Halil Sen and his sons are jubilant over the reduction of their workload and pumping time. They can now easily irrigate their field three or even four times before the first of September. Soil moisture is sufficient to prevent crop burnup.

The Sens also have been able to open up more land for other purposes. "There were parts of the field that we couldn't irrigate before," Halil Sen pointed out, "and there was a large low area in the middle of the field where water stood for long periods every winter during the rainy season. Growing wheat was out of the question because much of it would drown in the standing water. Land leveling has brought us a uniform stand of both crops, cotton and wheat, and we can use all of the field."

Because of plant disease problems, low yields, and unattractive prices, many farmers in the Buyuk Menderes region have been looking for crops other than cotton. Demonstration projects in the area have shown excellent results with sorghum, corn, and wheat. Some varieties of potatoes and tomatoes and citrus and other fruits have done well on many of the soils.

Sen's crop rotation program called for planting Mexican wheat after cotton, then a U.S. variety of grain sorghum in June, followed by vetch as a winter cover and green manure crop. After Sen's cotton harvest—a one-third increase in yield despite heavy infestation by wilt—the cotton stalks were plowed under and Mexican wheat was planted in mid-December, breaking a 40-year continuous cycle of cotton.

Farmers throughout the lower Buyuk Menderes river basin are requesting technical assistance from Topraksu, which is a counterpart of the Soil Conservation Service in the United States. Their enthusiasm has proved the success of Topraksu's onfarm water-development projects. ♦

by Atif Atilla
Agronomist,
General Directorate of Farm, Irrigation, and Soil Conservation
Turkey

and S. H. Fuchs
Conservation agronomist, SCS
Upper Darby, Pennsylvania

	Approximate man-days required to irrigate 16-acre field			Tractor-days required for pumping water to irrigate		
	Once	*Twice*	*Three times*	*Once*	*Twice*	*Three times*
Before leveling, using basin system	60-75	120-150	Too late in season	20-25	40-50	Too late in season
After leveling, using furrow system	5	10	15	5	10	15

Charles A. Bordsen, SCS soil scientist, on special duty in Thailand, gives onsite assistance on farm planning.

A decade of international cooperation

Continued from p. 6

sonnel, Peace Corps volunteers, and agricultural inspectors have benefited from observing project operations.

Although USDA has phased out its part of the project, well-trained Senegalese are carrying on and expanding the techniques developed.

Thailand

Since 1966, SCS has cooperated with AID in providing technical assistance on soil and water conservation projects to Thailand.

A five-man team worked with the Thailand Department of Land Development until 1970 when the original agreement with AID was phased out. Since then SCS has provided an irrigation specialist to assist with drainage and irrigation problems.

From 1966 to 1970, SCS helped Thai conservationists in giving technical advice on soil and water conservation to about 87,000 Thais. Direct assistance was given to 28,000 farmers, and conservation measures were started on about 110,000 rai of land (one rai equals 0.395 acre).

Soil survey, soil classification, and land capability work was conducted on an estimated 105 million rai. A soil interpretations handbook was prepared and issued along with soil suitability charts and other reports.

Local technicians were trained to use soil survey information for conservation planning and to help farmers apply soil and water conservation practices on their land.

SCS technical assistance in Thailand is continuing on a limited basis.

Tunisia

SCS work in foreign countries began in 1962 with the assignment of one man, John "Blackjack" Johnson, to help the Government of Tunisia. He was to plan a pilot watershed program in an area known as the Oued Marguellil, which comprises about 100,000 hectares.

A program was planned to follow SCS techniques for watershed planning prior to the actual installation of land treatment and structural measures.

From the beginning, the shortage of trained Tunisian manpower was a major limiting factor. Training in Tunisia and in the United States became one of the most important SCS contributions.

From March 1962 to June 1971, SCS provided soil scientists, agronomists, range conservationists, and engineers to the Tunisian Government. The one-man staff grew to 10 during the high point of operations in the latter part of the 1960's.

SCS helped complete soil surveys, prepare plans for subwatersheds, design and install structures, and plan range practices—always using and training Tunisian personnel when available. SCS also helped to start a plant materials center for the production of seed supplies of local grasses and legumes for range seeding and for erosion control.

More and more Tunisian technicians completed their training and were assigned to the project. By the end of 1970 the Tunisian staff was in a position to take over all functions of the soil and water conservation program. The Oued Marguellil AID project was phased out in June 1971.

SCS still has an irrigation engineer and a range conservationist in Tunisia working on improving livestock production.

Turkey

Turkey's "soil conservation service," called Topraksu, was originally set up and established with help from SCS employees who transferred to the predecessor AID agencies and worked in Turkey. As a result Topraksu is organized and functions pretty

much as does our own SCS.

In the 1950's and 1960's several hundred Turkish employees of Topraksu were trained in the United States under AID scholarships. And many SCS specialists went to Turkey under AID auspices to assist the young Topraksu with organizational and technical problems.

A formal agreement with AID was signed in 1967 for assistance to Topraksu. Later that year a team leader, an agronomist, and an irrigation engineer began 2-year assignments in Turkey.

In 1968, a three-man team—agronomist, irrigation engineer, and drainage engineer—went to Turkey on a short-term basis to help develop technical guidelines and standards.

Direct technical assistance was discontinued in 1970, but SCS continues to have close ties with Topraksu and is proud to have been a part of the development of a fine sister organization. Most of the Topraksu senior staff, including the present Administrator, Nechat Erkenci, have received training and experience in the United States and are continuing to broaden the scope and effectiveness of soil and water conservation programs in Turkey.

Vietnam

In 1967 and 1968, SCS cooperated in a USDA agreement for providing technical assistance to upgrade Vietnamese agriculture. SCS concentrated on irrigation and rural engineering aspects of the work. The objectives were to:

(1) Assist with planning, design, and construction of water control projects.

(2) Assist in developing Vietnamese competence in water utilization and land preparation for water control.

(3) Promote mechanization of agriculture, including adaptation and demonstration of simple agricultural equipment and water-lifting devices.

The Tunisian technician on the left is showing a laborer how to set siphon tubes for furrow irrigation at a seed-producing center.

(4) Promote and assist with the formation of water user associations.

(5) Assist in developing in-service training programs.

SCS provided seven men at the peak of its participation—a team leader (an irrigation engineer), a soil scientist, and five irrigation specialists.

At the end of 1968, AID decided to continue the work with direct-hire employees.

William S. Gaud, Administrator for AID, in presenting that agency's Meritorious Honor Award to the Office of Domestic Production, USAID/Vietnam, cited the SCS team for its contribution.

Zambia

In May 1968, USDA signed an agreement with AID to provide qualified operational manpower to assist with Zambia's orderly economic development.

SCS assigned a soil scientist to Zambia in September 1968 to help carry out soil survey work and furnish soil interpretations, to correlate the soils of Zambia into defined series, to train a Zambian staff in soil survey and interpretation work, to assist in selecting suitable areas for concentrated agricultural development, and to assist in selecting representative sites for research work.

During the 2 years of SCS assistance in Zambia, soil surveys were prepared in advance of planning on most development projects.

Short-term consultants

From 1962 to 1972 SCS sent 119 technical people to 33 countries on a short-term basis to give advice and recommendations. Kenneth E. Grant, SCS Administrator, made two trips to Pakistan to consult with government officials. Approximately 7,220 man-days of assistance have been provided.

The effect of this assistance on soil and water conservation programs around the world is difficult to ascertain, but it must be considerable if judged by present progress in this field as compared with that of 10 years ago.

Training in the United States

Throughout the past decade SCS has cooperated with many agencies and international organizations that have participant training programs. Under such programs students, technical people, and administrators come to this country to study techniques and procedures that can be adapted and used in their own countries. SCS has emphasized practical field training for these people.

During this period, 4,111 participants, sponsored mainly by AID, from 98 countries have spent 49,986 man-days with SCS. As a result, SCS is known around the world for its work in all aspects of soil and water conservation. ♦

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From the Administrator:

Wherever we can help

The United States has many different natural resource problems and different ways to solve them. Consider the variety to be found on a worldwide basis!

And yet, as we have found in America, there are similarities. Areas with comparable climate may benefit from similar types of technical conservation practices. Communities with comparable government may be able to use similar organizational or legal tools.

The ability to suggest alternatives for a workable practice or a workable program—and to innovate as the occasion demands—has been a trademark of the SCS conservationist. More than a hundred of our employees have traveled overseas for anywhere from a few weeks to 2 years or more to aid other nations in meeting conservation challenges.

A watershed project in Tunisia to prevent flood ravages . . . soil surveys in Brazil to find suitable areas for new homes and farms for millions of people . . . irrigation in India to help double food production . . . and several more.

The test of ability and innovation has been strong—for the SCS conservationist and for the people of another land with whom he works for a time. Both have passed the test. Foreign governments have spoken highly of our employees and their work overseas. SCS people have taught well and their counterparts have learned well—so well that SCS has been able to phase out its direct assistance in several countries.

In the process, the SCS people have learned as well. They return home better able to do their job or to take on broader responsibilities.

In addition to those SCS people who have given their talents overseas, hundreds more have helped foreign visitors. Thousands of officials and technicians from other countries have studied in the United States at universities and have spent time in practical field training with SCS conservationists. The challenge of teaching and learning has been the same, with much the same result.

The need is great for expertise in natural resource management throughout the world. As Secretary Butz said recently, "All people everywhere have good reason to be concerned with the question of potential food resources versus an expanding world population . . . We must duplicate in the coming generation—in a mere 28 years—the productive capacity that man has achieved since the dawn of history!"

The world is interested in a quality environment as well as in food. A recent United Nations environmental conference voted to set up a strong U.N. environmental agency wtih a broad mandate.

Protecting resources as they are being used is the experience of the Soil Conservation Service. We are glad to share that experience with other nations when called upon to help them gear up to meet their own goals.

Kenneth E. Grant